HYDROGRAPHICAL OBSERVATIONS ON THE "PRINCESSE ALICE."

THE yacht *Princesse Alice*, with the Prince of Monaco on board, left Monaco on July 18 and arrived at Gibraltar on the evening of July 22, having been detained some hours by the pursuit of a school of *Orca gladiator* and the capture of one of them. The whale hunt took place within sight of the rock. Having coaled, the ship left Gibraltar on the evening of July 23, and shaped a course for the Azores. On July 24 an interesting sounding was made in lat. 36° 6′ N., long. 10° 16′ W. (Paris). The depth was 1473 metres, and the temperature of the bottom water was 9°·4 C. As this thermometer was mounted so as to be overturned by the motion of a small screw propeller, its indication was not entitled to complete confidence; but when the dredge, coming from the same depth, brought a quantity of mud which had a temperature of about 8°·75 C., it was evident that the conditions as regards temperature were very different from those which obtain in the open waters of the North Atlantic. At the above depth the temperature could not be expected to be above 4°·5 C. It is evident that this sounding struck one of the main drains out of the abysmal regions of the Mediterranean, and furnishes evidence of the *brining down*, to use a stoker's expression, of the waters of that sea, of which a more particular description can be found in the article "Mediterranean" of the "Encyclopædia Britannica."

Unfortunately, no sample of the bottom water was procured, and confirmatory evidence of its salinity is lacking, but the excess of temperature is so great that we may use it with perfect confidence in estimating the composition of the water, considered as a mixture of the deep water of the Mediterranean with that of the neighbouring regions of the North Atlantic.

If we take the original temperature of the Mediterranean water in the mixture to be 13° C. and that of the Atlantic water to be 4°·5 C., it consists of 50 per cent. of Mediterranean and 50 per cent. of Atlantic water. This is a spot where, with adequate means, with the necessary skill and experience, and, above all, with sufficient patience, a very fine piece of oceanographical work can be done.

Continuing westwards, the ship's course passed close to the Gorringe or Getysburg bank. As the former *Princesse Alice* spent July 25, 1894, on this bank, when enormous quantities of fish were taken with the line, the Prince decided to spend July 25, 1902, on the same spot. The fishing was about equally successful, but there was not the same surprise or novelty about the experience. The depth of water on the bank is very uneven and the surface of the bottom very rough. The following soundings, taken when searching for the shallowest part, are given in the order in which they were made: 192, 146, 200, 122, 83, 177 metres. In the evening the westward course was resumed, and it was shaped so as to pass over the position of the Josephine bank. This bank was discovered a short time before the *Challenger* sailed, and at the beginning of the cruise it was a question whether she should not make a station on it; but, on the one hand, it was felt that the ship had been fitted out for the investigation of deep and not of shoal waters, and on the other the bank did not lie in her route either from the Channel to Gibraltar or on that from Gibraltar to Madeira. Moreover, the interest which attaches to oceanic shoals and to their study was not, and could not be, at that time recognised.

On July 26 soundings were obtained, gradually shoaling to 1038 metres with hard bottom. This was taken to be on the eastern escarpment of the bank, and one of the Prince's latest *nasses* or traps, made of wicker-work, was sent down and buoyed, with lights. The ship was kept near during the night, and early in the morning the process of heaving up was begun. It was continued with much patience, but the cable had evidently hooked on the rocky bottom, and it finally carried away. Had it been the *nasse* which had got fixed, it would have come away quite easily, because it would have been torn to pieces. The remainder of the day was spent in sounding over the bank, in so far as time permitted, and the results are rather remarkable.

In sharp contrast with the Gorringe bank, the depths on which are so uneven, the soundings made on the Josephine bank revealed a uniformity of depth which is astonishing. The superficial area of the bank is evidently very considerable, but in the time at disposal it was impossible even roughly to delineate it. An area of about three miles square was sounded over, and the depths are here given in the order in which they were obtained: 218, 230, 220, 219, 211, 216, 218, 215, 212, 215, 189, 190, 204, 208 metres. The descriptive value of these figures cannot be excelled. A successful, but in no way very remarkable, dredging was made in this water. In the evening the route was continued in the direction of Ponta Delgada, in the island of St. Michael. Soundings were obtained in 4275 and in 2589 metres, and the writer was enabled to attach to the sounding lines piezometers of two different and rather novel patterns, and thus to resume the experiments on compressibility at great pressures which he began on the *Challenger*. The instruments acted quite satisfactorily, and it is hoped that useful results will be obtained with them. On the morning of July 31, when only a few miles off the coast of St. Michael, the dredge was put over in 1189 metres, and a very rich haul was obtained.

Although no very definite or detailed programme exists, it is the Prince's intention to work among the islands for a week or two, then to make an excursion southwards to the very deep water which lies between this archipelago and the Canary Islands, and thence to work homewards so as to arrive at an European port by the middle of September. Up to the present date the weather has been everything that could be desired, and the bright, bracing climate of these islands is invigorating and refreshing.

J. Y. BUCHANAN.

Yacht *Princesse Aliee*, August 1.

NOTES.

THE impressive rite of the coronation of King Edward was performed on Saturday last in circumstances of unequalled splendour. All who witnessed the spectacle must have been moved by feelings of loyalty and love for their Sovereign and country, and of pride in the history of the British race. Few men of science appear to have been invited to the function, though the nation owes so much to them. Scientific knowledge combined with medical skill has brought the King safely through a period of great danger and suffering, and given us all cause for thankfulness at our monarch's return to health. The modern science of electricity contributed as much as the mediæval pageantry to make the day memorable. But the ceremony belongs more to the past than to the future; it is the symbol of unity between the King and his people, and it shows the basis of liberty of thought and action which is our national heritage, and without which progress is impossible. The past has truly been glorious, but the future needs the development of new attributes of national character if we are to maintain our position among the peoples of the world. We trust that the reign of King Edward VII. will not only be long and happy, but that it will be characterised by the cultivation of the scientific spirit which will promote its prosperity.

A SPECIAL number of the *Atti* is devoted to the anniversary meeting of the Reale Accademia dei Lincei, held at Rome on June 1 under the patronage of the King and Queen of Italy.

Prof. Pasquale Villari has been recently elected president of the Academy. The report of the vice-president, Signor Blaserna, shows that in the past year the Academy has issued three volumes of *Proceedings*, containing 192 pages and notes, a volume containing memoirs relating to moral sciences, and notices of excavations, brought out under the auspices of the Minister of Public Instruction, and four parts, with 160 plates, of the "Codex Atlanticus" of Leonardo da Vinci. The Academy has taken part in the meetings of the International Association of Academies, and in work connected with the Royal Society's "International Catalogue of Scientific Literature." The observatory on Monte Rosa has been considerably enlarged, a fund for this purpose having been founded by Queen Margherita, whose name the edifice bears; it is now available for researches in meteorology, physics and physiology. A fresh field of study has been opened up in the island of Crete, and an expedition, presided over by Prof. Halbherr, has taken a prominent part in the excavations proceeding in that island.

OF the three royal prizes offered by the Reale Accademia dei Lincei for the year, that for physics has been awarded to Prof. Cantone, of Pavia, for his researches in the phenomena of elastic equilibrium outside the limits of Hooke's Law. Prof. Cantone has obtained phenomena in elasticity closely resembling the phenomena of magnetic hysteresis, which are appropriately described as "elastic hysteresis," and the laws of which account for a large number of observed facts. The prize for archæology has been conferred on Prof. Gherardo Ghirardine, of Padua, whose work, while covering an extensive range, has been of especial interest in connection with the antiquities of the Veneti. The prize for history is unawarded. Under the Santoro foundation, an extraordinary prize has been awarded to Mr. Marconi, who, Signor Blaserna remarks, "is generally recognised as the first who had the fertile idea of making use of Hertzian waves, not for sending signals to a distance of a few metres, as had already been done by Righi, Lodge and other investigators, who deserve the credit for having first started in this direction, but for making them the basis of a system of telegraphy properly so-called." Of the two prizes offered by the Minister of Public Instruction, that for history has been divided, awards of 700 lire being made to Profs. Cogo (Genoa), Segre (Massa) and Sorbelli (Bologna), and premiums of 400 lire to Profs. Luiso (Lucca), Santini (Florence) and Strazulla (Messina). The Ministerial prize for mathematics has been divided into two prizes of 1300 lire, awarded to Profs. Giuseppe Bagnera (Messina) and Domenico de Francesco (Naples), and a premium of 700 lire has been assigned to Prof. Michele de Franchis (Melfi). The division of these prizes affords ample evidence of the activity of members of the Italian teaching profession in the matter of research. The proceedings of the meeting concluded with an address by Prof. G. Gloria on "The Position of the World in Modern Astronomy."

THE Advisory Committee appointed by the King in connection with the erection of a sanatorium for tuberculosis in England announces that 180 essays were sent in in competition for the three prizes. The Advisory Committee consists of Sir William Broadbent, Sir R. Douglas Powell, Sir Felix Semon, Sir Hermann Weber and Dr. Theodore Williams. The prizes have been awarded as follows:—First prize, value 500*l.*, Dr. Arthur Latham, with whom is associated as architect Mr. W. West (London). Second prize, value 200*l.*, Dr. F. J. Wethered, with whom are associated as architects Messrs. Law and Allen (London). Third prize, value 100*l.*, Dr. E. C. Morland, with whom is associated as architect Mr. G. Morland.

GILBERT WHITE's house at Selborne is again for sale, and the suggestion is made by Mr. E. A. Martin, member of the council of the Selborne Society, that it should be purchased as a permanent memorial of the father of British naturalists. The house, known as The Wakes, is situated in the main street of the village of Selborne, and is in much the same condition as it was in White's time.

THE British Pharmaceutical Conference is being held at Dundee as we go to press. The members were formally received by the Lord Provost of Dundee on Monday, and on Tuesday the opening meeting was held at the University College, when an address was delivered by the president.

REUTER'S AGENCY is informed that the Prince of Monaco has presented a quantity of deep-sea apparatus to Mr. W. S. Bruce for the Scottish Antarctic Expedition, including trawls, nets, water-bottles for obtaining samples of water from great depths for physical examination, thermometers and other similar apparatus.

THE annual meeting of the French Association for the Advancement of Science was held last week at Montauban, in the South of France, when an address on the development of wireless telegraphy was delivered by M. Carpentier, president of the Association. Electric traction was the chief subject of discussion at one of the general meetings. Since the last meeting the Association has received a legacy of two thousand francs from M. E. Lamy, and one of thirty thousand francs from M. Guilleminet.

THE following papers will be brought before the Section of Physiology at the Belfast meeting of the British Association:—"The Estimation of Small Quantities of Urea," Mr. Barcroft; "Nerve-Regeneration," Prof. W. D. Halliburton, F.R.S., and Dr. F. W. Mott, F.R.S.; "The Morphology of the Camel's Brain," Dr. W. Page May; "The Hydrolysis of Glycogen," Dr. W. A. Osborne and Mr. S. Zobel; "Some New Features in the Intimate Structure of the Human Cerebral Cortex," Dr. John Turner; (1) "The Paths of Conduction for Volitional Impulses, (2) "The Functions of the Pituitary Body," Prof. E. A. Schäfer, F.R.S.

THE committee entrusted by the Society of Arts to award the Shaw prize for industrial hygiene has awarded a gold medal, or a prize of 20*l.* to Mr. James Tonge, jun., of Westhoughton, Lancashire, for his hydraulic mining cartridge—an appliance for breaking down coal in mines without the use of explosives. The prize, under the conditions laid down by the testator (Mr. Benjamin Shaw), is given "For any discovery, invention, or newly-devised method for obviating or materially diminishing any risk to life, limb or health, incidental to any industrial occupation, and not previously capable of being so obviated or diminished by any known and practically available means."

ON August 5 a statue erected to the memory of Pasteur was unveiled at Dôle, the birthplace of the great chemist. The following account of the ceremony is given by the French correspondent of the *Chemist and Druggist*:—Nineteen years ago, on July 14, 1883, the Doloise municipality commemorated the fact by placing a marble slab on the modest house where he was born on December 27, 1822, in the Rue des Tanneurs, now called Rue Pasteur. For the inauguration of the statue the townspeople had made extensive preparations, and all the local notabilities, including the members of Parliament, were present. The Government was represented by M. Trouillot, Minister of Commerce, who made the distribution of medals and decorations that is customary here on such occasions. He afterwards proceeded to the ceremony of unveiling the monument, and made an interesting speech, in which he traced the life of Pasteur. The Minister referred to it as an incessant struggle against death and suffering, which ended in victory for the *savant*. He also spoke of the advantages suffering humanity al over the world had derived from Pasteur's discoveries. Never has the saying "genius is patience" been so truly proved as in the case of his life. In concluding, M. Trouillot said: "Pasteur's native place shows itself worthy of his memory and faithful to his teachings when it affirms its faith in the definite triumph of the ideas of peace, unity and justice." The Dôle statue of Pasteur is by the well-known sculptor M. Carlès, and was shown at the Paris Salon of the Artistes Français this spring. Mme. Pasteur and various members of her family attended the ceremony, and in the evening they were present at a banquet given in honour of the event.

A Reuter telegram from New York reports that a severe earthquake shock was felt at Skagway on Sunday last, August 10.

Lloyd's agent at Havre states that the steamer *Homer*, on arrival at that port, reported that on July 20, in latitude 0° 30′ north, longitude 29° 36′ west, she spoke the German four-master *Christine*. Whilst speaking this vessel she felt a severe earthquake shock. The compasses all oscillated violently. This lasted about 40 seconds. The German vessel also signalled the same experience.

On October 30, 1901, a strong earthquake felt in the neighbourhood of Lake Garda and especially at Salo gave an interesting record on the photographic tromometer at the Collegio della Querce in Florence. From the two component traces Father Melzi has drawn a diagram representing the resultant movement of the ground during the first forty seconds. For twenty-one seconds the oscillations took place chiefly along a line directed E. 37° 34′ N. and W. 37° 34′ S. At the end of this time the direction suddenly changed, through very nearly a right angle, to N. 54° 22′ W. and S. 54° 22′ E. The cause of the change is unknown, but, from the long interval that elapsed, it was clearly unconnected with the arrival of transverse vibrations.

Dr. Hans Reusch, director of the Geological Survey of Norway, has sent us a letter received by him from Dr. W. J. Branch, of Basse-Terre, St. Kitts, one of the Leeward Islands, containing an account of the effects observed there during the recent volcanic eruptions in Martinique and St. Vincent. The volcano Mount Misery, the highest point of the island, exhibited a few indications of sympathy with Mont Pelée and the Soufrière, but no remarkable effects were noticed at the time of the eruptions of these volcanoes. A fortnight after the destruction of St. Pierre, however, a loud explosion was heard by labourers working on the side of Mount Misery; flames seemed to leap out of the ground, and a strong wind swept by, overturning two small houses. At the same time a heavy thunderstorm occurred, with vivid lightning flashes. Though the actions of Mont Pelée and the Soufrière are apparently in sympathy, Dr. Branch's idea is "that Mount Misery is more in league with the volcanoes of Guadeloupe, Montserrat, Dominica and St. Lucia. Their history in the past as well as in the present time seems to me to favour this idea."

It has long been known that unhygienic conditions favour the occurrence of the disease known as beri-beri, and it has been surmised that it is dependent upon defective food. Major Rost, I.M.S., claims to have discovered a bacillus in fermenting rice and rice-liquor which he believes to be the specific organism of this disease. It produces in fowls many of the symptoms resembling beri-beri in man. Moreover, fowls feeding upon fermenting rice develop similar symptoms. The disease is therefore ascribed to the use of fermenting rice and especially rice-liquor, to which beverage the coolies, who are the main sufferers, are much addicted. Children never, and women rarely, drink the rice-water liquor, and hence the infrequency of the disease in these subjects. Interesting as Major Rost's observations are, they do not throw much light on the remarkable outbreak of disease, believed to be beri-beri, at the Richmond Asylum, Dublin, some years ago, the cause of which has never been explained. (See *Ind. Med. Gazette*, July 1901 and 1902).

Aids to practical navigation, however small they may be, should always be welcome. In the "single-handed dividers" patented by Mr. F. Howard Collins and sold by Mr. J. D. Potter, an improvement has been made on the dividers ordinarily in use for measuring distances on a chart. These new dividers are provided with two finger-holes, into which the thumb and forefinger can be inserted in a manner similar to that of using an ordinary pair of scissors, thus enabling the navigator to open and close them readily with one hand and giving a greater command over the instrument. The joint, which is made a round ball, is also of a very good form for handling. This instrument is strongly made in German silver and is suitable for the ordinary service of a sea-going vessel.

Prof. G. Hellmann has published the fourteenth volume of his remarkable reproductions of notable old papers and charts relating to meteorology and terrestrial magnetism. The present work deals with meteorological optics during the years 1000 to 1836, and is, as usual, accompanied by valuable bibliographical notes, the result of laborious researches which we think we may safely say have never been excelled and are possibly unequalled. Meteorological optics may be said to be a somewhat neglected branch of the science, and this renders the investigation the more welcome. The work contains four important papers on the rainbow and allied phenomena, including the classical treatise of the late Sir G. B. Airy "On the Intensity of Light in the Neighbourhood of a Caustic," three papers on halo phenomena, with others on mirage, twilight, &c. For readers wishing to study the early history of the subject, the author gives references to the works of Kämtz, Clausius and the recent important contributions of Dr. Pernter. As one instance of Prof. Hellmann's persistent researches, we may refer to the first of the papers now described, "De Radialibus impressionibus" (1311), by Theodorich, a remarkable work on atmospheric phenomena, which was supposed to have been buried for 500 years and lost to science until it was published by Venturi, at Basle, in 1814; but Dr. Hellmann discovered that Theodorich's theory was taught at the Erfurt University up to the beginning of the sixteenth century. At the present time only two copies of the original manuscript are known to exist, one at Basle and the other at Leipzig (the latter being not quite perfect).

The Imperial Department of Agriculture for the West Indies has just issued the following reports:—On the Botanic Station, Dominica, for the twenty months to the close of November, 1900; and on the Agricultural School, for the year 1901. On the Experiment Stations at Montserrat, for the fourteen months to the close of March, 1901; and on the Botanic Station, Agricultural School and Land Settlement Scheme, St. Vincent, for the year 1901. The reports are generally of a favourable character, and show that much useful work was accomplished in the distribution of plants and seeds, in experimenting with new plants, &c., which may be introduced for profitable cultivation, and so on. Details are given of the courses of practical instruction in the agricultural schools. The 1900 season in Dominica was a dry one, the rainfall of 57·75 inches being 23·95 inches less than the average. In St. Vincent, 1901 was fairly wet, the rainfall of 125·69 inches being 12·43 inches above the average. It would considerably enhance the value of these West Indian reports if the Imperial Commissioner could arrange for each series issued to cover the same period throughout the islands, instead of, as indicated above, each island adopting its own and often very irregular period.

The question of the existence of a portrait of Gilbert White is discussed by Mr. R. Holt-White in a letter to the August number of *Nature Notes*, with the result that there is no good reason to believe that any such picture is known.

We have received from Prof. H. F. Osborn a budget of papers on vertebrate palæontology and kindred subjects, two of which, "The Law of Adaptive Radiation" and "Homoplasy as a Law of Latent Homology," were mentioned in this Journal as they appeared in the *American Naturalist*. Special interest attaches to a communication on the Eocene Primates and rodents of North America (*Bull. Amer. Mus.*, vol. xvi. art. 17), in which it is stated that presumed representatives of the former group from the basal Puerco Eocene bear no sort of ancestral relationship to the undoubted Primates of the overlying Wasatch beds. Whether the latter forms are anthropoids or lemuroids, or whether they include members of both groups, or, finally, whether they constitute a primitive group by themselves, is left undecided. Three American families are recognised, the first of which (Hyopsodontidæ) is believed to be nearly related to the Hampshire Microchœrus. Of even greater importance, if well founded, is the author's recognition of a group of primitive rodents in the Bridger and Wasatch Eocene, for which the name "Proglires" is suggested. These forms had canines and rooted incisors, and their lower jaws lacked the backward-and-forward motion characteristic of their supposed descendants. They are typified by Cope's genus Mixodectes.

In the autumn of 1900 a gardener of Hundsheim, in German Altenburg, Lower Austria, brought to the high school at Vienna part of the lower jaw and an upper cheek-tooth of a rhinoceros which he said had been found in the vineyard where he worked, in association with other remains, not improbably including the entire skeleton. Recognising from the structure of the teeth that the remains did not belong to the ordinary woolly rhinoceros, Prof. F. Toula, to whom they were submitted, proceeded to Hundsheim, and was fortunate enough to disinter the almost complete skeleton of the animal, which has now been mounted. Unfortunately, the terminal third of the skull is missing, but sufficient remains to show that the animal was a two-horned species belonging to the same group as the living Sumatran rhinoceros. In a preliminary notice Prof. Toula proposed the name *Rhinoceros* (*Ceratorhinus*) *sumatrensis* for the new species, and in a recent issue (vol. xix. pt. 1) of the *Abhandlungen* of the Austrian Geological Survey he describes the skeleton in detail, figuring the various bones in no less than twelve plates. The breccia at Hundsheim in which the skeleton was found is of Pleistocene age, and is notable for containing the remains of a goat allied to the tahr (Hemitragus). Rhinoceroses of the *R. sumatrensis* group were previously unknown from the European Pleistocene.

A brief report on the disintegration of building stones in Egypt, by Mr. A. Lucas, has been issued by the Survey Department, Public Works Ministry, Cairo (1902). The decay of the building stones, which consist of limestone and sometimes of calcareous sandstone, appears mainly at or near the surface of the ground, and is often accompanied by an incrustation or efflorescence of sodium chloride. The cause of the disintegration is the entry into the stone of moisture and soluble salts, chiefly from the soil, which is always in a more or less saturated state.

The coal, lignite and asphalt rocks of Texas are dealt with in a *Bulletin* published by the University of Texas (1902), the Mineral Survey being under the direction of Mr. W. B. Phillips. The Eocene lignites, the Cretaceous and Carboniferous coals are described, mainly from an economic point of view. The lignite industry has felt the competition of fuel oil more keenly than that of the bituminous coal, but as there is a marked tendency to increase the price of oil, there is hope for the lignite miners. The asphalt rocks comprise sandstones, alternating sands and clays, and limestones impregnated with bitumen, and they occur in the Cretaceous formation sometimes where it impinges upon the Carboniferous, and also in the Tertiary strata.

With a view to stimulate planters in New South Wales to undertake the cultivation of the cork oak, the director of the Sydney Botanic Gardens has issued a pamphlet in which are embodied notes on the economic value, suitable soil and position for growing, and other details of management of this tree.

In the recently published "die Organographie der Pflanzen," want of space prevented Prof. Goebel from treating at any length the question of "regeneration in plants." A series of articles on this subject is now appearing in the *Biologisches Centralblatt*. The discussion is limited to regeneration in so far as it relates to the development of new parts or latent rudiments, and illustrations are taken from the ferns *Aneimia rotundifolia*, *Asplenium obtusifolium*, from the genus Bryophyllum of the Crassulaceæ, and from *Nymphaea stellata*, var. *bulbillifera*. In the case of the ferns, it will be noticed that the tendency is to push the formation of buds towards the apex, while in Bryophyllum the cutting off of supplies from the apex stimulates the growth of lateral buds. *Cyclamen persicum* affords an instance of the formation of new members induced by the stimulus caused by mutilation. If in the young seedling the stem apex is cut off just at the junction with the single cotyledon, one or more leaves are developed in various positions, perhaps more generally from the base of the petiole.

A popular paper on thunderstorms and lightning discharges, by Mr. A. H. Bell, and one on minute marvels of nature, by Mr. J. G. Ward, illustrated by photo-micrographs, appear in the August number of *Good Words*. The latter article contains several good reproductions of photographs showing internal structures of leaves.

The Royal Agricultural Society of England has issued a sixpenny pamphlet, written by the Society's zoologist, Mr. Cecil Warburton, with the title "Orchard and Bush-Fruit Pests and how to combat Them." After giving the ingredients and the methods of preparation of a few of the most useful and readily mixed insecticides, the pamphlet describes a number of commonly occurring insects affecting the leaves, blossoms, fruits or wood of orchard trees, with the best methods of preventing their attacks, of checking their depredations, or of destroying them altogether, where possible. The same kind of information is given with regard to various insects infesting currants, gooseberries and raspberries. The pamphlet is illustrated with twelve original wood cuts and is published for the Society by Mr. Murray.

A lecture on "The Relation of Science to Art: in reference to Taste and Beauty," delivered before the Hampstead Scientific Society by Sir Samuel Wilks, Bart., F.R.S., on May 12, has been published by the Society. The scientific attitude of mind is so often considered to be opposed to artistic feeling that this analysis of the relationships between the two temperaments is of wide interest. The artist admires the form, and the man of science seeks to discover the cause which produces it. The twofold characters of an object are closely associated and dependent on one another, but few individuals are able to appreciate them both fully. A large part of Sir Samuel Wilks's address is devoted to the consideration as to "whether beauty depends in any way upon fitness or utility, or whether the feeling is not an inherent faculty of the mind"; and the general conclusion arrived at is in favour of the former view. As regards people who are able to contemplate with admiration the world around them, the belief is expressed that "much of their appreciation of beauty or aversion to the ugly is obtained from the necessary physical laws governing all objects, although they themselves may be unconscious of the fact."

The additions to the Zoological Society's Gardens during the past week include a Bonnet Monkey (*Macacus sinicus*) from India, presented by Mr. H. G. B. Whitehead; a Lesser White-nosed Monkey (*Cercopithecus petaurista*) rom West Africa, presented by Mr. J. Hoatson; two Chinchillas (*Chinchilla lanigera*) from Chili, presented by Captain B. Dixon, R.A.; two Kinkajous (*Cercoleptes caudivolvulus*), two Cocoi Herons (*Ardea cocoi*), four American Jabirus (*Mycteria americana*), an Anaconda (*Eunectes murinus*) from Brazil, presented by Dr. E. A. Goeldi; a Common Squirrel (*Sciurus vulgaris*) British, presented by Miss Rice; two Graceful Ground Doves (*Geopelia cuneata*) from Australia, presented by Mrs. C. A. Thompson; a White Stork (*Ciconia alba*) European, presented by Mrs. A. Gregory; a Bennett's Tree Kangaroo (*Dendrolagus bennettianus*) from Queensland, presented by Mr. Winkley Smith; a Cocoi Heron (*Ardea cocoi*) from Brazil, presented by Mr. W. A. Churchill, H.B.M. Consul, Pará; two Coquerel's Mouse Lemurs (*Chirogaleus coquereli*) from Madagascar, two Red-masked Conures (*Conurus rubrolarvatus*) from Ecuador, a Blue-winged Siva (*Siva cyanouroptera*) from India, deposited; two Graceful Ground Doves (*Geopelia cuneata*) bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

ROTATION PERIODS OF THE SUPERIOR PLANETS.—In the *Comptes rendus* of the Paris Academy of Sciences for July 28, M. Deslandres gives the results of his experiments in determining the rotation of superior planets by means of the spectroscopic method based on the Fizeau-Doppler principle.

The method, which was described in detail in *Comptes rendus*, vol. cxx. p. 417, depends upon the differential displacement of the opposite ends of the equatorial diameter, which causes this diameter to appear inclined to its normal direction, and thereby gives, instead of a circular image of the planet in the spectrum, an inclined ellipse, the axis of which is inclined more or less depending upon the speed of the planet's rotation; the relative direction of the major axis of the ellipse depends upon the direction of the planet's rotation.

M. Deslandres uses a spectroscope of moderate dispersion and a wide slit, and emphasises the fact that the entire light of the planet may thus be used, and still very useful, though less accurate, results may be obtained. He points out that one advantage of this method is that the apparent displacement is double the real displacement due to the rotary motion, for, of course, both ends of the diameter are equally displaced, therefore a high degree of accuracy may be obtained. Experimenting on the rotation of Jupiter, two forms of instrument were used, first a small spectroscope with a wide slit and then a 30° prism mounted in front of the object-glass of a telescope of 0m.·55 aperture. In each case three exposures were made, the first with the slit, or the edge of the prism, parallel to the equator of Jupiter, and the second and third after having turned the complete apparatus through 90° and 180° respectively; thus the displacement of the equatorial extremities was made evident on both sides of their normal position, thereby giving greater accuracy to the measurements, and in the case of Jupiter indicating for the linear equatorial velocity of 12 km. an equatorial velocity, according to the displacement, of 48 km. The results obtained show very good accordance, and M. Deslandres claims a greater degree of accuracy for this method than is obtainable by the ordinary method. During this year the method has been applied to the determination of the rotation of Uranus, and it has already been shown that the planet rotates in a retrograde direction, but the detailed results will be given in a later communication.

THE DUTCH ECLIPSE EXPEDITION OF 1901.—In a preliminary report published by the Eclipse Committee of the Royal Academy of Sciences, Amsterdam, Profs. Julius, Wilterdink and Nijland give an account of the proceedings of the expedition which was sent out to Sumatra, by the Dutch Academy, to observe the total solar eclipse of May, 1901.

Elaborate preparations were made. Government help in the matters of transport and manual labour was obtained, and a number of officers and men belonging to the Dutch ironclad *Sumatra* was told off to assist in making the observations.

The programme of the expedition was divided into four parts: (1) the coronagraphs, (2) the spectrographs, (3) the physical observations, and (4) the collection of amateur observations, and the results of the observations made in each section are treated separately in the report.

The coronagraph negatives were mostly spoiled by cloud-fog, only those obtained by short exposures and on slow plates giving good results. Using the 40-feet coronagraph, kindly lent by the U.S. Naval Observatory, and a "Lumière jaune" plate measuring 24 × 30 inches, some very fine prominences and details of the inner corona were obtained on the negative.

Of the five spectrographs used, only one gave results which are of any use, and in the negatives obtained Prof. Julius makes a special point of the doubling of all the chromospheric crescents, which he assigns to the phenomenon of anomalous dispersion of the chromospheric light, afterwards pointing out the improbability of the doubling being of instrumental origin.

In the physical observations the clouds interfered seriously, so that little weight may be attached to the heat-radiation observations, but in the observations of the polarisation of the coronal light it is shown that the light at some distance from the sun's limb is more strongly polarised than that which is near to that limb, whilst the polarisation decreases again as the distance from the limb is increased.

The results of the amateur observations are various; 39 drawings and 69 photographs of the corona have been secured, and 37 of the latter are described as "good," "very good," or "excellent." Reports on the observations of the shadow-bands were received from seventeen stations.

THE SATELLITES OF SATURN AND URANUS.—Dr. J. J. See gives the results of his observations of the satellites of Saturn and Uranus, made with the 26 inch refractor of the U.S. Naval Observatory, Washington, in No. 3806 of the *Astronomische Nachrichten*.

The "Clark Micrometer II.," with magnifying powers of 388 for the satellites of Saturn and 606 for those of Uranus, was used, and the observations are based on the method of relative measures adopted by Prof. H. Struve at Pulkowa. The micrometer is so constructed that in measuring the position of Japetus it can be directly referred to Titan by means of a sliding eyepiece, thus probably giving more correct results than by the usual method.

Dr. See points out that the statement in his paper on the satellites of Uranus, *A.N.* 3676, that the places given in the American ephemeris are 37° in advance of the observed places, is an error due to the ambiguous wording of the ephemeris.

AUSTRALIAN CHILDREN'S GAMES.[1]

A certain amount of attention has been paid of late years to the subject of the games of primitive peoples, but so far we are only in the preliminary stage of the inquiry; indeed, a vast deal more evidence must be collected before sound generalisations can be made. A few suggestions have been thrown out by various students which must be regarded more as trial hypotheses than as definite conclusions, indeed they should be looked upon rather as "kites."

So few travellers think it worth their while to mention games and toys, especially those played by children, that the record for any country is imperfect, and for most peoples there is no information to hand. When there is any information it is nearly always simply a bare enumeration of the games played or of the toys employed; very rarely is a description given of the method of playing.

We are slowly learning the lesson that many of those activities which appear to be merely trivial have, or have had, an important significance in the evolution of human culture. The physiological, psychological and sociological aspects of playing have been dealt with by Karl Groos in his book "The Play of

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[1] *North Queensland Ethnography: Bulletin* No. 4, March, 1902, "Games, Sports and Amusements." By Walter E. Roth, Home Secretary's Department, Brisbane, C A. 8—1902.